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10/579,469	05/15/2006	Yuriko Suzuki	291013US40PCT	3346

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EXAMINER	
KETEMA, BENYAM	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/579,469	SUZUKI ET AL.	
	Examiner	Art Unit	
	BENYAM KETEMA	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In an amendment dated, October 10, 2009 the applicant amended claims 1, 8 and cancelled claims 3 and 13- 14. Currently claims 1, 2 and 4-12 are pending.

Response to Amendment

2. Applicant's arguments filed October 26, 2009 have been fully considered and is partially persuasive.

With respect to air nozzles being placed in **equilateral triangle.** The Examiner has withdrawn the Rejection under 35 U.S.C. §112, first paragraph.

3. Applicant's arguments in respect to the receiver being separated from the surface has been fully considered and is not persuasive.

On page 7 of the Remarks, the Applicants argue that Satoshi fails to teach or suggest the claimed feature of "the receiver is separated from a surface on which the nozzles that form the equilateral triangular shape are arranged," as recited in Claims 1 and 8. The Examiner must respectfully disagree. Satoshi in brought in to show the placement of the nozzles as its being arranged in **equilateral triangular shape**. On the other hand the primary reference Suzuki discloses that the receiver is separated from a surface on which the nozzles are arranged (Fig 1 & 2).

4. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, 4, 5 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (JP Publication No. 2001-022499) in view of Satoshi et al (JP Publication No. 2004/157677).

As in Claim 1, Suzuki et al. discloses a force feedback (Paragraph 1) apparatus comprising:

- *a jetting unit that includes a nozzles and that is configured to control a jet amount or a jet direction of gas or liquid jetted from the nozzles* (Paragraph 16 and 17);
- *a jet control unit configured to control the jet amount or the jet direction of the gas or the liquid according to a position or an orientation of a receiver that is configured to receive a pressure by the gas or the liquid jetted from the jetting unit so as to provide force feedback to an operator* (Paragraph 5)*, wherein,*
- *the position or the orientation of the receiver is measured by a receiver measurement unit,* (Paragraph 5, line 4-5)
- *when the receiver has a concave shape of a diameter D* (Paragraph 12),
- *the receiver is separated from a surface on which the nozzles that form the equilateral triangular shape are arranged.* (Fig 1 item 1a (receiving object) and Fig2 item 5 (blast reception means)) discloses that the receiving object is separate from the air blasting discharge means (2).
- Suzuki et al. does not explicitly discloses *intervals for placing each of the nozzles in the jetting unit are set such that at least one nozzle exists within a region having a diameter of a constant.times.D*, However Suzuki's implicitly discloses *intervals for placing the nozzles in the jetting means are set such that at least one nozzle exists within a region having a diameter of a constant.times.D*. Because Suzuki et al. discloses of using a concave field so that a wind pressure can be caught efficiently as shown in paragraph 12. This implies that the intervals for placing the nozzle should have a diameter of

constant times (D). Given that this placement would obviously allow for efficient capturing of the air blast, therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Suzuki et al. by spacing the jetting nozzles so that at least one nozzle would be in direct proximity to the concave shaped receiving unit so that the wind pressure can be caught efficiently. Because Suzuki et al. suggests using a concave shaped receiving unit as being a more efficient way of coughing air pressure that is coming out of the air nozzle, this will allow a person skilled in the art to space the nozzles apart according to the diameter of concave shaped receiving unit so that at least one nozzle will be under the concave shaped receiving unit.

- *in which the constant is a positive value equal to or less than 1*. Suzuki et al. did not disclose the constant as being positive value equal to or less than 1, however having constant with positive value equal to or less than 1 would be an alternate design choose. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a concave shaped receiving unit (device) with constant 1 or 0.8 or 0.7 or any other value, with the motivation to measure a wind pressure in a virtual space and report said pressure measurement to the mobile operator (See Suzuki, paragraph 4).
- However Suzuki et al. fails to disclose *the nozzles are arranged in an equilateral triangular shape in the jetting unit,*

- But Satoshi et al discloses *the nozzles are arranged in an equilateral triangular shape in the jetting unit,* (Fig 3 item 11, 12 and 13) wherein three air blowers (i.e. nozzles) are arranged in an equilateral triangular shape.

Suzuki et al. and Satoshi et al are analogous art because they are from the common area of virtual reality system that uses air jets in order to get force feedback. Suzuki et al. discloses the use of air jet nozzles in virtual reality to provide the user tactile feed back (force feedback). But fails to disclose the arrangement of air jet nozzles in equilateral triangular shape, However Satoshi et al discloses that the air jet nozzles are arranged in equilateral triangular shape, in a system similar to that of Suzuki's. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzuki et al's arrangement of air jet nozzles with Satoshi et al's placements of air jet nozzles in equilateral triangular shape, because Satoshi et al discloses that having the nozzles disposed in triangular shape will minimize the effect of interference coming out of the air jets (Paragraph 43)

As in Claim 2, Suzuki et al. discloses *the force feedback* (Paragraph 1) *apparatus as claimed in claim 1, wherein the receiver has a hemispheric shape* (Paragraph 12) *and* Suzuki et al. does not explicitly discloses *the constant is 0.8.*However, Suzuki et al. implicitly discloses in paragraphs 12 and 81 that the shape of the receiving unit could have different shape. Hence it would have been obvious to one of ordinary skill in the art at the time of the invention to use a concave shaped receiving unit (device) with constant 0.8 or 0.7 or any other value as it would have been design choice, with the

motivation to measure a wind pressure in a virtual space and report said pressure measurement to the mobile operator (See Suzuki, paragraph 4).

As in Claim 4, Suzuki et al. discloses *the force feedback (Paragraph 1) apparatus as claimed in claim 1, wherein the jetting unit includes a nozzle open/close unit for opening or closing a nozzle of the nozzles in response to an occurrence of a jet of the gas or the liquid* (Paragraph 18)*, and wherein* Suzuki et al. does not explicitly disclose a *point of support for opening and closing of the nozzle with the open/close unit is provided on the an operator side of the nozzle.* However it would have been obvious to one of ordinary skill in the art at the time of the invention to position a point of support for opening and closing unit of the air jet nozzle at any side of the operator. Since Suzuki et al. explicitly discloses that the operator has the flexibility of motion and can operate the device at arbitrary position, the placement of the supporting unit of the opening and closing part would be on the side of the operator would have been design choice.

As in Claim 5, Suzuki et al. discloses *the force feedback (Paragraph 1) apparatus as claimed in claim 1, further comprising a virtual object calculation unit configured to calculate a state of a virtual object in a virtual environment* (Paragraph 5, line 7-8), *to be displayed by virtual environment display unit, according to the position or the orientation of the receiver.* (Paragraph 19)

As in Claim 8, Suzuki et al. discloses a force feedback (Paragraph 1) method comprising:

- *controlling a jet amount or a jet direction of gas or liquid from nozzles included in a jetting unit according to a position or an orientation of a receiver that is configured to receive a pressure from the gas or the liquid jetted from the nozzles so as to provide force feedback to an operator,* (Paragraph 5)
- *when the receiver has a concave shape of a diameter D,* (Paragraph 12)
- *the receiver is separated from a surface on which the nozzles that form the equilateral triangular shape are arranged.* (Fig 1 item 1a (receiving object) and Fig2 item 5 (blast reception means)) discloses that the receiving object is separate from the air blasting discharge means (2).
- Suzuki et al. does not explicitly discloses *intervals for placing the nozzles in the jetting unit are set such that at least one nozzle exists within a region having a diameter of a constant.times.D, in which the constant is a positive value equal to or less than 1.* However Suzuki's implicitly discloses *intervals for placing the nozzles in the jetting means are set such that at least one nozzle exists within a region having a diameter of a constant.times.D.* Because Suzuki et al. discloses of using a concave field so that a wind pressure can be caught efficiently as shown in paragraph 12. This implies that the intervals for placing the nozzle should have a diameter of constant times (D). Given that this placement would obviously allow for efficient capturing of the air blast, therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to

modify the invention of Suzuki et al. by spacing the jetting nozzles so that at least one nozzle would be in direct proximity to the concave shaped receiving unit so that the wind pressure can be caught efficiently. Because Suzuki et al. suggests using a concave shaped receiving unit as being a more efficient way of coughing air pressure that is coming out of the air nozzle, this will allow a person skilled in the art to space the nozzles apart according to the diameter of concave shaped receiving unit so that at least one nozzle will be under the concave shaped receiving unit.

- in which the constant is a positive value equal to or less than 1. Suzuki et al. did not disclose the constant as being positive value equal to or less than 1, however having constant with positive value equal to or less than 1 would be an alternate design choose. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a concave shaped receiving unit (device) with constant 1 or 0.8 or 0.7 or any other value, with the motivation to measure a wind pressure in a virtual space and report said pressure measurement to the mobile operator (See Suzuki, paragraph 4).
- However Suzuki et al. fails to disclose *the nozzles are arranged in an equilateral triangular shape in the jetting unit,*
- But Satoshi et al discloses *the nozzles are arranged in an equilateral triangular shape in the jetting unit,* (Fig 3 item 11, 12 and 13) wherein three air blowers (i.e. nozzles) are arranged in an equilateral triangular shape.

Suzuki et al. and Satoshi et al are analogous art because they are from the common area of virtual reality system that uses air jets in order to get force feedback. Suzuki et al. discloses the use of air jet nozzles in virtual reality to provide the user tactile feed back (force feedback). But fails to disclose the arrangement of air jet nozzles in equilateral triangular shape, However Satoshi et al discloses that the air jet nozzles are arranged in equilateral triangular shape, in a system similar to that of Suzuki's. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzuki et al's arrangement of air jet nozzles with Satoshi et al's placements of air jet nozzles in equilateral triangular shape, because Satoshi et al discloses that having the nozzles disposed in triangular shape will minimize the effect of interference coming out of the air jets (Paragraph 43)

As in Claim 9, Suzuki et al. discloses t*he force feedback* (Paragraph 1) *apparatus as claimed in claim 8, wherein the receiver has a hemispheric shape* (Paragraph 12) *and* Suzuki et al. does not explicitly discloses *the constant is 0.8.* Suzuki et al. implicitly discloses in paragerhp12 and 81 that the shape of the receiving unit could have different shape. Hence it would have been obvious to one of ordinary skill in the art at the time of the invention to use a concave shaped receiving unit (device) with constant 0.8 or 0.7 or any other value as it would have been design choice, with the motivation to measure a wind pressure in a virtual space and report said pressure measurement to the mobile operator (See Suzuki, paragraph 4).

As in Claim 10, Suzuki et al. discloses *the force feedback* (Paragraph 1) *method as claimed in claim 8, further comprising calculating a state of a virtual object in a virtual environment,* (Paragraph 5, line 7-8) *to be displayed by a virtual environment display unit, according to the position or the orientation of the receiver.* (Paragraph 19)

7. Claims 6, 7 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (JP Publication No. 2001-022499) as applied to claim1-5 and 8-10 above, and further in view of Sigalov (U.S. Patent No. 5,017,770)

As in Claim 6, Suzuki et al. discloses *the force feedback (*Paragraph 1) *apparatus as claimed in claim 5, further comprising*, but fails to disclose *a sound generation control unit configured to control an attribute of a sound, generated by sound generation unit, according to the state of the virtual object, or the position or the orientation of the receiver.* However Sigalov disclose *sound generation control means for controlling an attribute of a sound* (column 8 line 14-25 and column 13 line 1-8) *, to be generated by sound generation means, according to the state of the virtual object, or the position or the orientation of the receiver.* (Column 8 line 14-25 and column 13 line 1-8 as well as Fig 6 and 8)

Suzuki et al. and Sigalov are analogous art because they are from the common area of computer inter-face via virtual space in order to performing music or playing games or doing some type of task using virtual space. Suzuki et al. discloses the use of air jet nozzles in virtual reality to provide the user tactile feed back (force feedback). But fails

to disclose sound generation unit in order to control attribute of a sound using the air jet system, However Sigalov discloses sound generation unit that can be used in virtual reality system in order to control attribute of a sound, in a system similar to that of Suzuki's. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzuki et al.'s air jetting system to incorporate Sigalov's sound generation unit in order to control attribute of a sound using the air jet system, because this will allow the user to be active participant in production of sound (i.e. music) as well as it would make the system more user friendly.

As in Claim 7, Suzuki et al. discloses *the force feedback* (Paragraph 1) *apparatus as claimed in claim 5, further comprising,* but fails to disclose *sound generation unit is configured to control for controlling an attribute of a sound, generated by sound generation unit, according to the state of the virtual object, or the position or the orientation of the receiver.* However Sigalov disclose *sound generation unit is configured to control for controlling an attribute of a sound* (column 8 lines 14-25 and column 13 lines 1-8)*, generated by sound generation unit, according to the state of the virtual object, or the position or the orientation of the receiver.* (column 8 line 14-25 and column 13 line 1-8 as well as Fig 6 and 8)*and* Suzuki et al. does not explicitly disclose *identification of the receiver or a shape or a color of the receiver measured by the receiver measurement means.* However Suzuki's implicitly discloses *identification of the receiver or a shape or a color of the receiver measured by the receiver measurement unit.* Because Suzuki et al. discloses the use of different kind of receiving

object (for example, thing seen and built on the operator's 3 hand, an arm and a racket, and hammer) to make it receive virtual contact according the blast reception means 5 to the virtual object 1b at this time) shown in paragraph 30 and 31. This implies that the *shape or a color of the receiver can be changed and measured by the receiver.* Given that this virtual object would obviously allow for receiver to be measured and have its shape and color changed. The air blasting receive section detection means 6 always detects the position of the blast reception means 5, and direction. The racket and hammer which are the operator's 3 bodily part and possession thing as an object which attached the blast reception means 5 or make it a part are projected into the virtual space 1 as the virtual air blasting receiving object 1a (Paragraph 32). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Suzuki et al. so that the air blasting receive section detection means could measure and changing the shape and color of the receiving unit. Because Suzuki et al. suggests using air blasting receive section detection means 6 always detects the position of the blast reception means 5, and direction.

As in Claim 11, Suzuki et al. discloses *the force feedback* (Paragraph 1) *method as claimed in claim 10,* but fails to disclose *controlling an attribute of a sound generated by a sound generation unit according to the state of the virtual object or the position or the orientation of the receiver.* However Sigalov disclose *controlling an attribute of a sound* (column 8 line 14-25 and column 13 line 1-8) , *generated by a sound generation unit according to the state of the virtual object or the position or the*

orientation of the receiver. (Column 8 line 14-25 and column 13 line 1-8 as well as Fig 6 and 8). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Suzuki et al. by so that the air blasting receive section detection means could measure and changing the shape and color of the receiving unit. Because Suzuki et al. suggests using air blasting receive section detection means detects the position of the blast reception means as well as its orientation.

As in Claim 12, Suzuki et al. discloses *the force feedback* (Paragraph 1) *method as claimed in claim 11*, but fails to disclose *controlling an attribute of a sound including controlling an attribute of a sound generated by sound generation unit according to the state of the virtual object or the position or the orientation of the receiver.* However Sigalov disclose *controlling an attribute of a sound including controlling an attribute of a sound* (column 8 lines 14-25 and column 13 lines 1-8), *generated by sound generation unit according to the state of the virtual object or the position or the orientation of the receiver.* (Column 8 line 14-25 and column 13 line 1-8 as well as Fig 6 and 8).*and* Suzuki et al. does not explicitly disclose *identification of the receiver or a shape or a color of the receiver measured by the receiver measurement means.* However Suzuki's implicitly discloses *identification of the receiver or a shape or a color of the receiver measured by the receiver measurement means.* Because Suzuki et al. discloses the use of different kind of receiving object (for example, thing seen and built on the operator's hand or arm, a racket, and hammer) to make it receive virtual contact

according the blast reception means 5 to the virtual object 1b at this time) shown in paragraph 30 and 31. This implies that the *shape or a color of the receiver can be changed and measured by the receiver.* Given that this virtual object would obviously allow for receiver to be measured and have its shape and color changed. The air blasting receive section detection means 6 always detects the position of the blast reception means 5, and direction. The racket and hammer which are the operator's 3 bodily part and possession thing as an object which attached the blast reception means 5 or make it a part are projected into the virtual space 1 as the virtual air blasting receiving object 1a (Paragraph 32). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Suzuki et al. by so that the air blasting receive section detection means could measure and changing the shape and color of the receiving unit. Because Suzuki et al. suggests using air blasting receive section detection means detects the position of the blast reception means as well as its orientation.

Suzuki et al. and Sigalov are analogous art because they are from the common area of computer inter-face via virtual space in order to performing music or playing games or doing some type of task using virtual space. Suzuki et al. discloses the use of air jet nozzles in virtual reality to provide the user tactile feed back (force feedback). But fails to disclose sound generation unit in order to control attribute of a sound using the air jet system, However Sigalov discloses sound generation unit that can be used in virtual reality system in order to control attribute of a sound, in a system similar to that of Suzuki's. Therefore, it would have been obvious to one of ordinary skill in the art

at the time of the invention to modify Suzuki et al.'s air jetting system to incorporate Sigalov's sound generation unit in order to control attribute of a sound using the air jet system, because this will allow the user to be active participant in production of sound (i.e. music) as well as it would make the system more user friendly.

Prior Art

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent No. 7,352,356 discloses pressure-based refreshable scanning tactile graphic display and human-computer interface. US Patent No. 6,757,068 discloses a head-worn tracking device that tracks a hand-mounted 3D beacon relative to the head. "Design of Force Feedback Utilizing Air Pressure toward Untethered Human Interface" 2002; disclose force feedback method that utilizes air pressure to provide a force sensation to users.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENYAM KETEMA whose telephone number is (571)270-7224. The examiner can normally be reached on Monday- Friday 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shalwala Bipin H can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-

8300.Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B.K/

Examiner, Art Unit 2629

/Bipin Shalwala/

Supervisory Patent Examiner, Art Unit 2629